

Serial No. 10/522,774

H&A-137

Amendment

Responsive to Office Action dated September 17, 2008

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) An exhaust gas purifying apparatus for a diesel engine, comprising:

an NOx adsorption and reduction type catalyst that adsorbs and reduces NOx in an exhaust gas; and

a diesel particulate filter that collects particulate matters in the exhaust gas from the upstream side of a flow of the exhaust gas,

the catalyst and filter being arranged sequentially in an exhaust channel that exhausts the exhaust gas of the diesel engine;

wherein an oxidation catalyst is arranged on the downstream side of the diesel particulate filter with respect to flow of the exhaust gas; and

wherein the NOx adsorption and reduction type catalyst includes at least one element selected from potassium, sodium, magnesium, strontium, and calcium; at least one element selected from a rare earth metal; at least one element selected from precious metals such as platinum, rhodium, and palladium; and at least one element selected from titanium or silicon,
wherein the NOx adsorption and reduction type catalyst is a composite composed of a metal, metal oxides, or a compound oxide, or a composite in which the composite is carried in porous heat resistant metal oxides.

2. (Canceled)

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3. (Currently Amended) The exhaust gas purifying apparatus for the diesel engine according to claim 21, wherein the oxidation catalyst adsorbs NOx in the exhaust gas, and is a hydrocarbon adsorption and combustion type catalyst that adsorbs NOx in the exhaust gas, burns hydrocarbon and purifies the NOx.

4. (Currently Amended) The exhaust gas purifying apparatus for the diesel engine according to claim 1, wherein further including heating means that heats the exhaust gas on the upstream side of the exhaust gas channel of the NOx adsorption and reduction type catalyst.

5. (Previously Presented) The exhaust gas purifying apparatus for the diesel engine according to claim 1, further comprising heating means that heats the diesel particulate filter.

6. (Currently Amended) The exhaust gas purifying apparatus for the diesel engine according to claim 1, further comprising:

NOx amount estimation means that estimates an amount of NOx accumulated in the NOx adsorption and reduction type catalyst from a measured value of a physical quantity that stands for represents an operation condition of the diesel engine such as temperature, an air-fuel ratio, oxygen concentration, and a lean operation time of an exhaust gas that flows into the NOx adsorption catalyst; and

control means that, when the amount of accumulated NOx estimated by the NOx amount estimation means reaches a fixed value, performs control of increasing the

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temperature of the exhaust gas that flows into the NOx adsorption and reduction type catalyst to a temperature necessary for NOx reduction and purification, and supplying-supplies fuel that is a reducing agent necessary for reducing accumulated NOx to the exhaust gas.

7. (Original) The exhaust gas purifying apparatus for the diesel engine according to claim 6, wherein the fuel that is a reducing agent necessary for reducing NOx is supplied to the exhaust gas by increasing the amount of the fuel supplied to the diesel engine.

8. (Original) The exhaust gas purifying apparatus for the diesel engine according to claim 6, wherein the fuel that is a reducing agent necessary for reducing NOx is supplied to the exhaust gas by means of a fuel secondary injection that injects the fuel to an engine combustion chamber in an expansion stroke or an exhaust stroke of the diesel engine.

9. (Currently Amended) The exhaust gas purifying apparatus for the diesel engine according to claim 1, further comprising:

exhaust gas temperature measuring means that measures the temperature of the exhaust gas that flows into the diesel particulate filter;

exhaust gas temperature judgment means that judges when the exhaust gas temperature measured by the exhaust gas temperature measuring means is lower than a predetermined temperature;

particulate capture amount estimation means that estimates an amount of particulates captured by the diesel particulate filter; and

heating means that heats the exhaust gas, wherein

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control of heating the exhaust gas into the predetermined temperature is performed by the heating means, and the particulates captured by the diesel particulate are burned and removed when an estimated value of the amount of particulates estimated by the particulate capture amount estimation means reaches a predetermined capture amount, and the exhaust gas temperature is judged by the exhaust gas temperature judgment means to be a lower temperature than the predetermined temperature.

10. (Canceled)

11. (Original) An exhaust gas purifying method of a diesel engine, comprising the steps of:

arranging an NOx adsorption and reduction type catalyst that adsorbs and reduces NOx in an exhaust gas, wherein the NOx adsorption and reduction type catalyst includes at least one element selected from potassium, sodium, magnesium, strontium, and calcium; at least one element selected from a rare earth metal; at least one element selected from precious metals platinum, rhodium, and palladium; and at least one element selected from titanium or silicon, wherein the NOx adsorption and reduction type catalyst is a composite composed of a metal, metal oxides, or a compound oxide, or a composite in which the composite is carried in porous heat resistant metal oxides, and a diesel particulate filter that collects particulate matters in the exhaust gas from the upstream side of a flow of the exhaust gas sequentially in an exhaust gas channel that exhausts the exhaust gas of the diesel engine;

reducing and purifying NOx in the exhaust gas by the NOx adsorption and reduction type catalyst; and

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collecting and removing diesel particulates in the exhaust gas by the diesel particulate filter; and

arranging an oxidation catalyst on the downstream side of the diesel particulate filter with respect to flow of the exhaust gas.